



911 Communicator Questions to ask of Severe Weather Spotters



1. Name, home address, and telephone number.
2. Is caller a trained severe weather spotter?
3. Time of call.
4. Time of severe weather event (may be different than call time).
5. Location of severe weather event, which may be different from location where spotter called from. (If spotter doesn't say 1.2 miles southeast of Anytown, then request names of streets at nearest intersection).

6. Type of Weather Event – (most common to least common order)

- a. If it's a **wind report**, ask if the reported speed is measured or estimated.
- b. If it's a **wind damage report**, ask caller to estimate how many trees are damaged, uprooted, etc., or extent and severity of structural damage.
- c. If it's a **hail event**, ask if the reported size is measured or estimated. (dime, nickel, quarter, golf ball, soft ball?)
- d. If it's a **flood report**, ask caller to estimate depth of water on roads or on lawns, ask if the water is stationary or moving, and extent or severity of damage.
- e. If it's a **"rotating wall-cloud" report**,
 - i. Persistent rotation (usually on backside of storm) = **true rotating wall-cloud**.
 - ii. No rotation = **scary-looking cloud**, or a **non-rotating wall-cloud**.
- f. If it's a **funnel-cloud report**, ask caller if the funnel-shaped cloud is actually rotating. If the caller is too far away from the funnel-cloud they may not be able to see rotation.
 - i. No rotation = **just a scary-looking cloud**.
 - ii. Rotation = **a true funnel-cloud**.
- g. If it's a **tornado report**,
 - i. Swirling-rotating dirt & debris spray-whirl at the ground-level in conjunction with cloud-base rotational effects directly overhead, but there isn't any visible "funnel-cloud" = **it's a tornado**.
 - ii. Rotating funnel-shaped cloud extends from cloud base to ground with swirling-rotating dirt & debris spray-whirl at the ground-level = **it's a tornado**.
 - iii. Swirling-rotating dirt & debris spray-whirl at the ground-level in conjunction with some kind of a rotating funnel-cloud overhead, but not touching the ground = **it's a tornado**.
 - iv. If the so-called tornado isn't rotating and there is no damage and no swirling dirt/debris spray-whirl at ground level = **it's a scary-looking cloud**.



Note: The "equal" sign (= or =) represents the phrase "good probably or most likely."

Official Definitions:

Funnel-cloud – a funnel-shaped, rotating cloud feature extending from a cloud base, but is not in contact with the ground; nor is there any swirling/rotating dirt & debris spray/whirl at the ground-level (nothing going on at ground-level). Please read “Words of Caution” section below. (Photo: Doug Raflik)



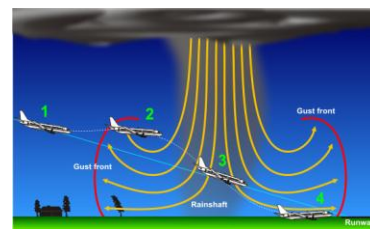
Tornado - a violently, rotating, column of air, extending from the cloud-base to the ground (tornado is rotating wind – you can't see air). There may or may not be a visible condensation-funnel associated within the tornado. Please read “Words of Caution” section below. (Photo: Rusty Kapela)



Rotating Wall Cloud – an isolated lowering of the rain-free, or nearly rain-free thunderstorm base that persistently rotates. Some wall clouds look like beer-barrels, or big flat thumbs, or may be fragmented. Many, but not all, true funnel-clouds and tornadoes develop underneath or close to a rotating wall cloud. Rotating wall-clouds usually, but not always, precede tornado & funnel-cloud development, and will typically be found on the back side of a severe thunderstorm. Some wall clouds don't rotate – ignore them.



Downburst (microburst or macroburst) – a strong downdraft of rain-cooled air and possibly rain on or near ground-level that may result in damaging, straight-line surface winds reaching speeds of 60 to 150 mph. Most toppled trees and debris will be laid down in nearly straight lines.



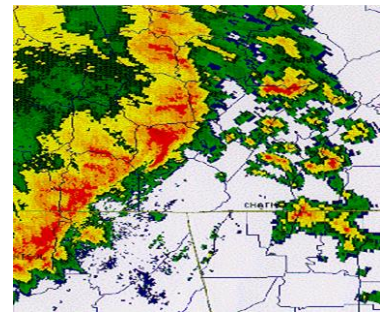
Scary-looking Cloud – any non-rotating, cloud fragment (scud) or cloud feature, that resembles a funnel-cloud or tornado, and scares people enough so that they call 911 dispatchers, or the local NWS office, with false reports of tornadoes or funnel-clouds. (Photo: Josh Roth)



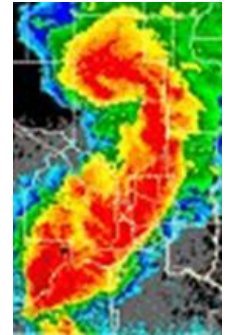
Shelf Cloud – A horizontally-orientated, low-hanging, shelf or snowplow-shaped cloud feature on the front side of downbursts, most common with squall lines (a line of thunderstorms). Some non-rotating, cloud fragments (scud) on the underside of the shelf cloud may briefly resemble funnel-clouds or tornadoes. These scary-looking, non-rotating cloud fragments (scud) generate the vast majority of false tornado and funnel-cloud reports from spotters and non-spotters.



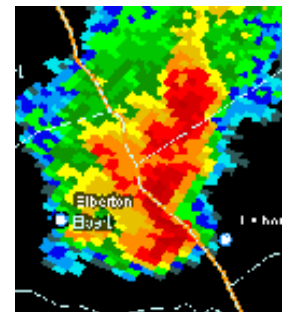
Squall Line – A series of thunderstorm cells orientated in a line or narrow band. Squall lines typically produce stronger, widespread, straight-line winds (downbursts) compared to isolated thunderstorms. Wind gusts in the strongest squall lines can reach 100 to 150 mph and result in considerable, widespread damage, similar to the severity of tornado damage. They may extend for 100 mile or more in length and attain forward speeds of 50 to 60 mph. Squall lines will typically have well-developed shelf clouds on their front side.



Bow Echo - Some squall lines have a portion that accelerates forward, ultimately giving the entire line the appearance of an archer's "bow." These cases are referred to as "bow echoes." Strong winds are the reason for the bowing effect. Therefore, bow-shaped squall lines have stronger surface winds than those that have a straight-line or narrow band appearance. The strongest surface winds with a bow echo would be at the apex of the bow.



Spearhead Echo - Some squall lines have a pointed appendage extending toward the direction of echo motion. Such extreme echo acceleration resembles a "spearhead." A very intense downburst is the reason for the extreme acceleration. These situations can potentially result in the most extreme downburst, straight-line wind speeds of 100-150 mph.



Words of caution: It is possible to have a tornado but never have a visible funnel-cloud. See picture to the right, from the National Severe Storm Laboratory (NSSL). Confirmation of a tornado is the swirling-rotating, dirt/debris spray-whirl at ground-level, in conjunction with cloud-base rotation directly above. So, the tornado can develop before the so-called funnel-cloud. Meteorologically, once you have a tornado, the funnel-shaped cloud associated with the tornado is called a condensation funnel rather than a funnel cloud. The condensation funnel isn't the tornado, and it's not needed in order to have a tornado. The lack of a condensation funnel, or a weakly-developed condensation funnel, indicates that the tornado vortex was too weak to cool and condense a visible funnel, and/or the air below cloud base was too dry.



If there is an associated, condensation funnel, it will develop downward from the cloud base, and in many cases all the way to the ground. Once the condensation funnel reaches the ground it gives a person the false perception of a “touchdown.” However, the actual tornado may have already been in progress for several minutes prior to the “touchdown,” ripping up trees, fences, barns, homes, power-lines, and other buildings.

It is possible to have a tornado or funnel-cloud but never have a preceding, rotating wall cloud. Not all rotating wall clouds lead to a tornado situation – a good number don’t.

Odd-ball reports of lofted chunks of debris rotating in the air in conjunction with just a small condensation funnel, or no condensation funnel at all, usually indicates a tornado. Some spotters will see the lofted, rotating debris in the air but not be able to identify an associated condensation funnel, or even cloud-base rotation, due to falling rain limiting their visibility. In other words, they may not recognize that they are actually looking at a tornado. This has happened many times.

Debris from a tornado 10, 20, 30, or 40 miles away, may fall from the sky, but it will usually not be rotating on a vertical axis – it generally falls straight down. Ask caller if debris is falling straight down or if it is rotating on a vertical axis.

Other Definitions:

Watch – weather conditions within the watch area are favorable or ripe for the development of severe weather. Short-fuse, convective watches are issued for about 6 hours in duration for tornadoes and/or severe thunderstorm winds and large hail.

Warning – severe weather is imminent, or has already developed, or was reported by a severe weather spotter or the general public.

On-line reference material:

<http://www.crh.noaa.gov/mkx/?n=spotters>

<http://www.crh.noaa.gov/mkx/?n=scary-clouds>

http://www.crh.noaa.gov/mkx/?n=wi_severe_weather_climatology

<http://emergencymanagement.wi.gov/>

<http://www.spc.noaa.gov/>

<http://www.spc.noaa.gov/fag/tornado/>

<http://www.spc.noaa.gov/climo/online/>

<http://www.nws.noaa.gov/om/brochures/basicspot.pdf>

<http://www.spc.noaa.gov/misc/AbtDerechos/derechofacts.htm>

<http://www.weather.gov/>

<http://www.weather.gov/om/>

<http://www.srh.weather.gov/jetstream/index.htm>

<http://www.fema.gov/plan/prevent/saferoom/>

<http://www.fema.gov/kids/>

Check “SkyWarn” page on NWS web sites

Although this document was composed for 911 Dispatchers, it can be used by anyone interested in learning more about severe weather.

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911SvrWxQuestions.doc